

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Robert J. McMillen et al.	Examiner:	Le Hien Luu
Serial No.:	- - -	Group Art Unit:	2152
Filed:	February 14, 2001	Docket:	5104.05
Title:	MULTICAST TRANSMISSIONS IN A MULTISTAGE INTERCONNECT NETWORK		

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Preliminary to the first Office Action in the above-identified application, please amend the application as follows:

IN THE SPECIFICATION

Page 1, please amend the title as follows --MULTICAST TRANSMISSIONS IN A MULTISTAGE INTERCONNECT NETWORK--.

Page 1, before line 1, please insert the following sentence: --This is a continuation of application Serial No. 09/189, 853, filed November 10, 1998, which is a continuation of U.S. Pat. No. 5,872,904, filed May 24, 1996, and issued February 16, 1999, which is a continuation of U.S. Pat. No. 5,522,046, filed June 3, 1994, and issued May 28, 1996, which is a continuation of U.S. Pat. No. 5,321,813, filed May 1, 1991, and issued June 14, 1994.--

Page 5, line 18, please delete "of".

Page 6, line 20, please delete " $\lceil \log_b N \rceil$ " and insert therefor $\lceil \log_b N \rceil$ --.

Page 6, line 22, please delete " $\lceil \log_b N \rceil$ " and insert therefor $\lceil \log_b N \rceil$ --.

Page 12, line 13, please delete " $\lceil \log_b N \rceil$ " and insert therefor $\lceil \log_b N \rceil$ --.

Page 12, line 15, please delete " $\lceil \log_b N \rceil$ " and insert therefor $\lceil \log_b N \rceil$ --.

Page 15, line 17, please delete " $\lceil \log_8 N \rceil$ " and insert therefor $\lceil \log_8 N \rceil$ --.

Page 15, line 18, please delete " $\lceil \log_8 N \rceil$ " and insert therefor $\lceil \log_8 N \rceil$ --.

Page 33, line 18, please delete "loop" and insert therefor --loops--.

Page 47, line 3, please delete " $\lceil X/4 \rceil$ " and insert therefor $\lceil X/4 \rceil$ --.

Page 47, line 4, please delete " $\lceil X/4 \rceil$ " and insert therefor $\lceil X/4 \rceil$ --.

Page 58, line 15, before "links" please insert --and back channel--.

Page 59, line 7, before the second occurrence of "DPs" please insert --network--.

Page 59, line 8, please delete "its" and insert therefor --the--.

Page 59, line 8, after the first occurrence of "DP 140" please insert --of the Master PM
12--.

Page 59, line 10, please delete "the Master" and insert therefor --a--.

Page 60, line 2, please delete " $\lceil \log_2 b \rceil$ " and insert therefor $\lceil \log_2 N \rceil$ --.

Page 60, line 2, please delete " $\lceil \log_2 N \rceil$ " and insert therefor $\lceil \log_2 N \rceil$ --.

Page 76, line 26, after the sentence ending "the next stage." please insert the sentence --If
the desired port is unavailable, the next numerically higher port (modulo 8) that is available is
chosen.--.

Page 78, line 18, please delete "a single output port for all switch nodes" and insert
therefor --a specified output port in each switch node--.

Page 83, line 11, please delete both occurrences of
" $\lceil \log_2 N \rceil$ " and insert therefor $\lceil \log_2 N \rceil$ --.

Page 83, line 13, please delete " $\lceil \log_8 N \rceil$ " and insert therefor $\lceil \log_8 N \rceil$ --.

Page 85, line 16, please delete " $\lceil \log_8 N \rceil$ " and insert therefor $\lceil \log_8 N \rceil$ --.

Page 85, line 18, please delete " $\lceil \log_8 N \rceil$ " and insert therefor $\lceil \log_8 N \rceil$ --.

In the Abstract, line 6, please delete " $\lceil \log_b N \rceil$ " and insert therefor $\lceil \log_b N \rceil$ --.

In the Abstract, line 8, please delete " $\lceil \log_b N \rceil$ " and insert therefor $\lceil \log_b N \rceil$ --.

IN THE CLAIMS

Please delete claims 1-153 and add new claims 154-165 as follows:

154. (NEW) A multistage interconnect network comprising:

(a) a plurality of switch nodes connected together, each of the switch nodes comprising a first plurality of input ports selectively connectable to a second plurality of output ports, the multistage interconnect network comprising more than $\lceil \log_b N \rceil$ stages of switch nodes, wherein b is a total number of switch node input/output port pairs, N is a total number of network input/output port pairs, and $\lceil \log_b N \rceil$ indicates a ceiling function providing the smallest integer not less than $\log_b N$, the stages thereby providing a plurality of paths between any network input port and network output port to enhance fault tolerance and lessen contention;

(b) the multistage interconnect network including forward channel and back channel signal paths between the switch nodes;

(c) the multistage interconnect network capable of multicast transmitting forward channel messages from a source connected to the multistage interconnect network to one or more destinations connected to the multistage interconnect network;

(d) the multistage interconnect network capable of combining back channel replies received from the destinations into a single result, wherein the result is transmitted on the back channel to the source.

155. (NEW) The system of claim 154, wherein the multistage interconnect network steers a multicast request for a supercluster to a bounce back point within the network, wherein all multicast requests to the supercluster use the same bounce back point.

156. (NEW) The system of claim 155, wherein the multistage interconnect network steers a multicast request from one supercluster to a destination supercluster through a bounce back point for the destination supercluster.

157. (NEW) The system of claim 154, wherein the multistage interconnect network permits only one multicast request at a time within a supercluster, thereby preventing deadlock between competing multicast requests.

158. (NEW) A method of operating a multistage interconnect network comprising:

(a) multicast transmitting forward channel messages from a source connected to the multistage interconnect network to one or more destinations connected to the multistage interconnect network, wherein the multistage interconnect network comprises a plurality of switch nodes connected together, the multistage interconnect network including forward channel and back channel signal paths between the switch nodes, each of the switch nodes comprising a first plurality of input ports selectively connectable to a second plurality of output ports, the multistage interconnect network comprising more than $\lceil \log_b N \rceil$ stages of switch nodes, wherein b is a total number of switch node input/output port pairs, N is a total number of network input/output port pairs, and $\lceil \log_b N \rceil$ indicates a ceiling function providing the smallest integer not less than $\log_b N$, the stages thereby providing a plurality of paths between any network input port and network output port to enhance fault tolerance and lessen contention; and

(b) combining back channel replies received from the destinations into a single result in the multistage interconnect network, wherein the result is transmitted on the back channel to the source.

159. (NEW) The method of claim 158, further comprising steering a multicast request for a supercluster to a bounce back point within the multistage interconnect network, wherein all multicast requests to the supercluster use the same bounce back point.

160. (NEW) The method of claim 159, further comprising steering a multicast request from one supercluster to a destination supercluster through a bounce back point for the destination supercluster within the multistage interconnect network.

161. (NEW) The method of claim 159, further comprising permitting only one multicast request at a time within a supercluster, thereby preventing deadlock between competing multicast requests.

162. (NEW) A system for transmitting messages, comprising:

- (a) a plurality of switch nodes connected together in a multistage interconnect network using forward channel and back channel signal paths therebetween; and
- (b) means for multicast transmitting forward channel messages from a source connected to the multistage interconnect network to one or more destinations connected to the multistage interconnect network; and
- (c) means for combining back channel replies received from the destinations into a single result, wherein the result is transmitted on the back channel to the source.

163. (NEW) The system of claim 162, further comprising means for steering a multicast request for a supercluster to a bounce back point within the network, wherein all multicast requests to the supercluster use the same bounce back point.

164. (NEW) The system of claim 163, further comprising means for steering a multicast request from one supercluster to a destination supercluster through a bounce back point for the destination supercluster.

165. (NEW) The system of claim 163, further comprising means for permitting only one multicast request at a time within a supercluster, thereby preventing deadlock between competing multicast requests.

REMARKS

In filing this continuation application, the Applicants request that claims 1-153 of the parent application be cancelled and that new claims 154-165 be added. The new claims do not involve any new matter or objectionable changes.

Further, the specification has been amended to make certain minor corrections and to change the ceiling function symbol from "[]" to "| |" for consistency throughout. These changes were also made to the parent applications.

When the Examiner takes this application up for action, he is requested to take the foregoing into account.

If a telephone inquiry would be helpful in resolving any issues, please contact the undersigned attorney at 310-642-4146.

Respectfully submitted,

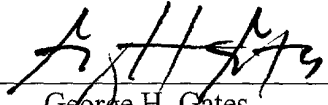
Robert J. McMillen et al.

By their attorneys,

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By 
Name: Isabell Ogata